

Application Serial No. 10/572,725
Reply to office action of July 23, 2008

PATENT
Docket: CU-4700

Amendments To The Claims

The listing of claims presented below will replace all prior versions, and listings, of claims in the application.

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Listing of claims:

1. (currently amended) An RF front-end transceiver comprising:

a frequency synthesizer or a base band processor providing a frequency control signal;

an oscillator for outputting a resonant frequency signal [[whose]] such that a frequency of the resonant frequency signal from the oscillator is controlled by [[a]] the frequency control signal;

a receive amplifier for amplifying and outputting a receive RF signal such that a frequency of the receive RF signal from the receive amplifier is controlled by the frequency control signal;

a receive mixer for mixing the receive RF signal amplified and the resonant frequency signal to convert the receive RF signal into a receive base band signal such that a frequency of the receive base band signal from the receive mixer is controlled by the frequency control signal;

a transmit mixer for mixing a transmit base band signal and the resonant frequency signal to convert the transmit base band signal into a transmit RF signal such that a frequency of the transmit RF signal from the transmit mixer is controlled by the frequency control signal; and

a transmit amplifier for amplifying and outputting the transmit RF signal such

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that a frequency of the transmit RF signal from the transmit amplifier is controlled by the frequency control signal, wherein a resonant frequency of at least one of the receive amplifier, the receive mixer, the transmit mixer and the transmit amplifier is controlled by the frequency control signal.

2. (original) The RF front-end transceiver according to claim 1, wherein the frequency control signal is provided from ~~a frequency synthesizer or a~~ the base band processor.

3. (currently amended) An RF front-end receiver comprising:

a frequency synthesizer or a base band processor providing a frequency control signal;

an oscillator for outputting a resonant frequency signal [[whose]] such that a frequency of the resonant frequency signal from the oscillator is controlled by [[a]] the frequency control signal;

a receive amplifier for amplifying and outputting a receive RF signal such that a frequency of the receive RF signal from the receive amplifier is controlled by the frequency control signal; and

a receive mixer for mixing the receive RF signal amplified and the resonant frequency signal to convert the receive RF signal into a receive base band signal such that a frequency of the receive base band signal from the receive mixer is controlled by the frequency control signal, wherein a resonant frequency of at least one of the receive amplifier and the receive mixer is controlled by the frequency control signal.

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4. **(currently amended)** The RF front-end receiver according to claim 3, wherein the frequency control signal is provided from ~~a frequency synthesizer or a~~ the base band processor.

5. (previously presented) The RF front-end receiver according to claim 3, wherein the frequency control signal includes an analog frequency control signal and a digital frequency control signal.

6. (previously presented) The RF front-end receiver according to claim 3, wherein the frequency of the resonant frequency signal is controlled by an analog frequency control signal and a digital frequency control signal, and wherein, a resonant frequency of the receive amplifier and the receive mixer is controlled by the frequency control signal or only the digital frequency control signal.

7. (previously presented) The RF front-end receiver according to claim 6, wherein the receive amplifier has a net input resistance controlled by the digital frequency control signal.

8. **(currently amended)** An RF front-end transmitter comprising:

a frequency synthesizer or a base band processor providing a frequency control signal;

an oscillator for outputting a resonant frequency signal [[whose]] such that a

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frequency of the resonant frequency signal from the oscillator is controlled by [[a]]
the frequency control signal;

a transmit mixer for mixing a transmit base band signal and the resonant
frequency signal to convert the transmit base band signal into a transmit RF signal such
that a frequency of the transmit RF signal from the transmit mixer is controlled by
the frequency control signal; and

a transmit amplifier for amplifying and outputting the transmit RF signal such
that a frequency of the transmit RF signal from the transmit amplifier is controlled
by the frequency control signal, wherein a resonant frequency of at least one of the
transmit mixer and the transmit amplifier is controlled by the frequency control signal.

9. (currently amended) The RF front-end transmitter according to claim 8, wherein
the frequency control signal is provided from ~~a frequency synthesizer or a~~ the base
band processor.

10. (previously presented) The RF front-end transmitter according to claim 8, wherein
the frequency control signal includes an analog frequency control signal and a digital
frequency control signal.

11. (previously presented) The RF front-end transmitter according to claim 8, wherein
the frequency of the resonant frequency signal is controlled by an analog frequency
control signal and a digital frequency control signal, and wherein, a resonant frequency
of the transmit amplifier and the transmit mixer is controlled by the frequency control

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signal or only the digital frequency control signal.

12. (previously presented) The RF front-end transmitter according to claim 11, wherein the transmit amplifier has a net input resistance controlled by the digital frequency control signal.

13. (currently amended) An amplifier comprising:

a frequency synthesizer or a base band processor providing a frequency control signal;

an amplification unit for amplifying a signal inputted to an input unit and outputting the amplified signal such that a frequency of the amplified signal from the amplification unit is controlled by the frequency control signal to an output unit;

an oscillator for outputting a resonant frequency signal such that a frequency of the resonant frequency signal from the oscillator is controlled by the frequency control signal; and

an input resonant unit connected to the input unit, and for changing a frequency of the resonant frequency from the oscillator in accordance with [[a]] the frequency of the frequency control signal, wherein the frequency control signal is used to control [[a]] the frequency of [[a]] the resonant frequency signal outputted from [[an]] the oscillator.

14. (currently amended) The amplifier according to claim 13, further comprising:

an output resonant unit connected to the output unit, and for changing the

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frequency of the resonant frequency signal in accordance with the frequency control signal.

15. (previously presented) The amplifier according to claim 13, wherein the frequency control signal includes an analog frequency control signal and a digital frequency control signal.

16. (previously presented) The amplifier according to claim 13, wherein the resonant unit is any one of a first LC tank including a inductor controlled by the digital frequency control signal and a capacitor controlled by the analog frequency control signal;

a second LC tank including a capacitor controlled by the digital frequency control signal, a capacitor controlled by the analog frequency control signal and a fixed capacitor;

a third LC tank including an inductor and a capacitor controlled by the digital frequency control signal, and a capacitor controlled by the analog frequency control signal and a fixed inductor; and

a fourth LC tank including an inductor controlled by the digital frequency control signal, an inductor controlled by the analog frequency control signal and a fixed capacitor.

17. (previously presented) The amplifier according to claim 13, wherein the frequency control signal includes a digital frequency control signal.

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18. **(currently amended)** The amplifier according to claim 13, further comprising:

a net resistance control unit connected to the input unit, and for changing the net input resistance in accordance with the frequency of the frequency control signal.

19. **(currently amended)** The RF front-end transceiver according to claim 1 **further comprising: wherein**

[[a]] the base band processor for inputting the receive base band signal and for outputting the transmit base band signal; **[[, wherein]]**

the oscillator, the receive amplifier and the receive mixer comprising an RF front-end receiver exhibiting an input impedance;

the transmit mixer and the transmit amplifier comprising an RF front-end transmitter exhibiting an having an output impedance; and

the oscillator, the receive amplifier, the receive mixer, the transmit mixer and the transmit amplifier are controlled by the frequency control signal to substantially match **[[an]] the** input impedance with **[[an]] the** output impedance of the transceiver such that the transceiver transmits substantially a maximum power over a specific frequency band.

20. **(previously presented)** The RF front-end transceiver according to claim 1, wherein the frequency synthesizer comprises:

a phase frequency detector (PFD) for receiving a reference frequency, f_{REF} ;

a current pump operatively coupled to the phase frequency detector;

a low pass filter (LPF) operatively coupled to the current pump;

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a digital tuner (DT) in parallel to the low pass filter and operatively coupled to the current pump;

the oscillator operatively coupled to the LPF and to the DT, wherein the oscillator is a digital analog tuning voltage controlled oscillator (DAT-VCO) for providing the output resonant frequency, f_{LO} ;

an N divider operatively coupled to the DAT-VCO and to the PFD, wherein a digital control voltage (VDT) signal output is located between the DT and the DAT-VCO, and an analog control voltage (VAT) signal output is located between the LPF and the DAT-VCO.